

serene senescence

modular aging in place in fargo, north dakota



inspiration

How can modular accessory dwelling units facilitate aging in place in Fargo, North Dakota?

How can **modular** accessory dwelling units facilitate aging in place in Fargo, North Dakota?

└ needs
based

How can modular accessory dwelling units facilitate aging in place in Fargo, North Dakota?

↳ needs
based

↳ smaller, intimate, more
personalized living
space

How can modular accessory dwelling units facilitate aging in place in Fargo, North Dakota?

↳ needs
based

↳ smaller, intimate, more
personalized living
space

↳ people prefer
to age in their
own homes for
as long as they
possibly can

How can modular accessory dwelling units facilitate aging in place in Fargo, North Dakota?

↳ needs
based

↳ smaller, intimate, more
personalized living
space

↳ people prefer
to age in their
own homes for
as long as they
possibly can

↳ Fargo currently
does not mention
ADUs in the land
development code

"A secondary, usually smaller unit on a property with a primary house. It is self-contained with its own bathroom and kitchen. ADUs come in all shapes and sizes and can include stand-alone one-story and two-story units as well as those above garages"

-Austin, Texas Land Development Code

what is an accessory dwelling unit?

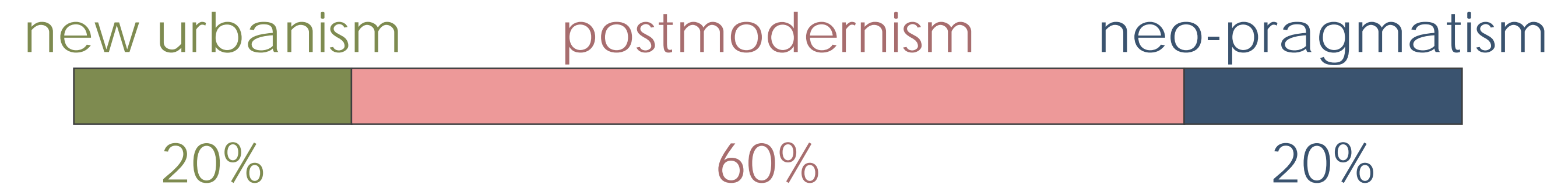
research

system of inquiry
emancipatory

strategies
interpretive
qualitative
simulation

tactics
literature review
case studies
logical iterations

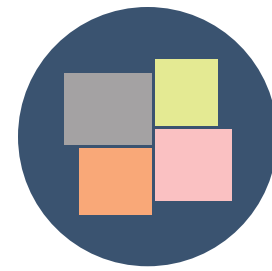
philosophy



role of design

responsive to spatial needs of residents
modularity makes it easy to design, reduces
costs, and shortens construction time
incorporates the use of universal design
principles so that it is accessible for everyone
aesthetically pleasing to fit with existing structures
addresses the living needs of the community

research agenda



modularity & assembly

logical iterations:

Google SketchUp

Hand Sketching

literature review:

sips.org

Structural Insulated
Panel Association

Diamond Pier Footings
Pin Foundations, Inc.



ADUs & tiny homes

literature review & case studies:

*In-Laws, Outlaws, and
Granny Flats*
Michael Litchfield

*Backyard Cottages: A New
Choice for Seattle
Families*
City of Seattle Dept.
of Planning and
Development



universal design & aging in place

literature review:

*The Accessible Home:
Designing for All Ages
and Abilities*
Deborah Pierce

*Housing for the Elderly:
Privacy and Independence
in Environments for the
Aging*
J. David Hoglund

*Residential Design for Aging
in Place*
Drue Lawlor & Michael
A. Thomas



regulations & zoning

case studies:

Minneapolis, Minnesota

Austin, Texas

Seattle, Washington

*In-Laws, Outlaws, and
Granny Flats*
Michael Litchfield

Land Development Code
Fargo, North Dakota

research topics

outcomes

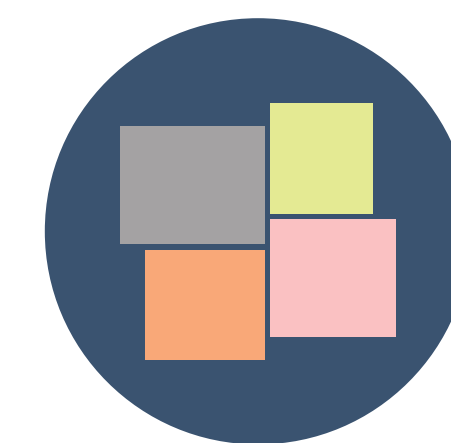
zoning code, process, module design, example solutions



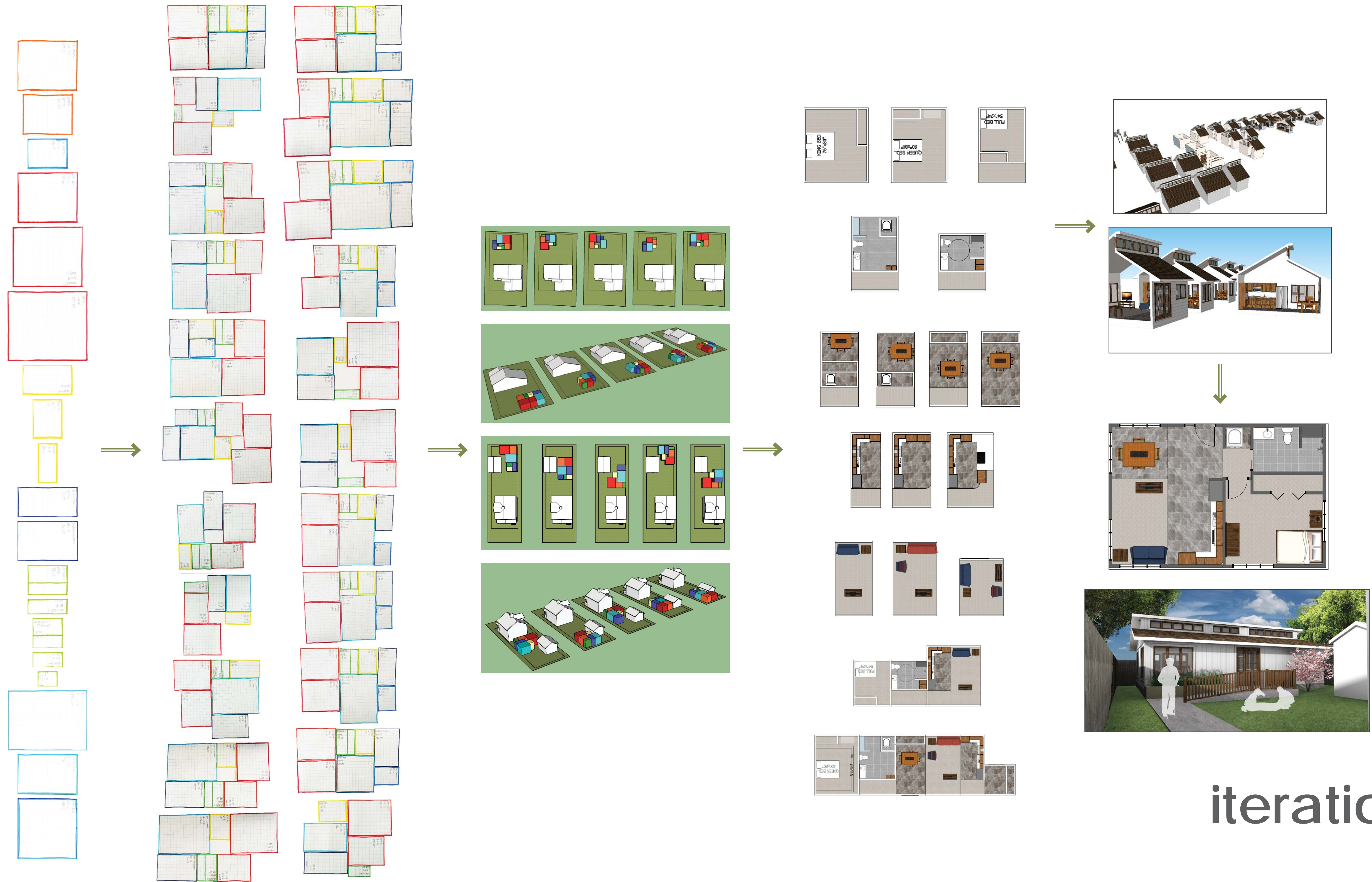
zoning code

	minneapolis, minnesota	seattle, washington	austin, texas	common standards listed in In-Laws, Outlaws & Granny Flats	current fargo building code	proposed fargo ADU code
ADU squrae footage compared to primary dwelling	ADU must be smaller than the primary dwelling					ADU must be smaller than the primary dwelling
allowable zones	residence, office, commercial, downtown, industrial living	single family 2, single family 3 lots larger than 5,750 square feet	single family, lowrise			sr-1, sr-2, sr-3, sr-4
property owner occupancy	property owner must live in either the primary residence or ADU		property owner must live in either the primary residence or ADU for at least 6 months per calendar year	property owner must live in either the primary residence or ADU		property owner must live in either the primary residence or ADU for at least 6 months per calendar year
total allowable lot coverage	ADU + parking cannot exceed 676 square feet or 10% of lot area, whichever is greater	impervious cover of the site cannot exceed 45%, building coverage cannot exceed 40%	on lots 1,000-5,000 square feet: 15% on lots larger than 5,000 square feet: 35%	minimum lot size of 5,000 square feet, maximum lot coverage of 30-40%	20-50% depending on zone, most lots in Fargo are sr-2, sr-3 or sr-4 which have maximum coverage of 25-45%	no change to current code
setbacks	front: ADU must be in rear side: rear: 3'-5' depending on zone		front: ADU must be in rear side: rear: 5 feet, 10 feet on corner lots	front: 20 feet side: 5 feet rear: 10 feet	front: accessory structure not allowed side: 4-15 feet rear: accessory structures must be at least 3 feet from rear line	no change to current code
minimum square footage	300 square feet					300 square feet

	minneapolis, minnesota	seattle, washington	austin, texas	common standards listed in In-Laws, Outlaws & Granny Flats	current fargo building code	proposed fargo ADU code
maximum square footage	1,300 square feet total of habitable and parking area OR 16% of the lot, whichever is greater, but no larger than 1,600 square feet	1,000 square feet or 0.15 FAR, whichever is less; maximum of 550 square feet on the second story	including garage and storage areas: single family: 800 sq. ft. lowrise: 650 sq. ft.	750 square feet or it can be listed as a percent of the footprint of the primary structure	the total square footage of accessory buildings may not exceed the footprint of the house	1,200 square feet OR 12% of the lot, whichever is less
distance from primary structure	20 feet from habitable portion of house	at least 10 feet from primary structure	5 feet from primary structure	10 feet, may be closer to non-habitable spaces	none, but an accessory building closer than 6 feet to the primary structure must have additional fire protection	8 feet from habitable portion of primary structure
maximum height	cannot exceed the height of the primary OR 20 feet., whichever is less; the highest point of ADU roof may not exceed the highest point of the primary	limited to two stories, and may not exceed a height of 30 feet	12-23 feet, depending on lot width	separate ADU: 12 feet above garage: 22 feet	accessory bildings may not exceed 15 feet in height	18 feet or height of primary, whichever is less; the highest point of ADU may not exceed the highest point of primary
parking	no additional parking space required	one additional space required if the property is greater than 0.25 miles from an activity corridor served by transit	one additional space except in urban centers and lowrise zones			one additional space required unless the property is within 0.25 miles of a transit stop
materials	exterior materials must be durable			siding, trim, and roof pitch should match existing house to help unit blend in to surroundings and keep the aesthetic style of the lot		siding, trim, and roof pitch should complement the existing house
entrance	entrances ecouraged o face public street or alley		entrance must not face side lot line or rear lot line unless there is an alley	both entries cannot face the street unless unit door is screeded from view; varies greatly between cities		entrances ecouraged o face public street or alley



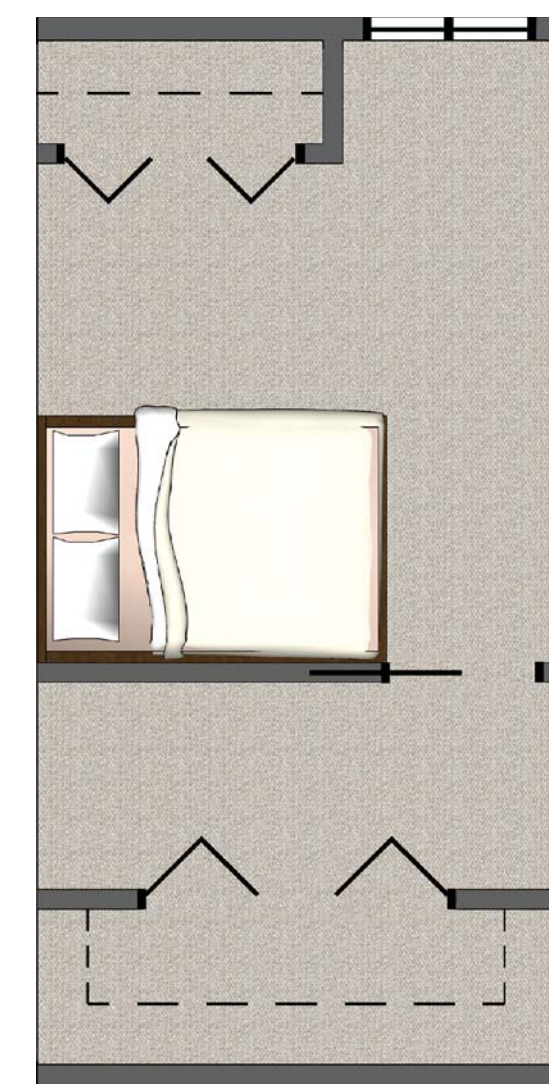
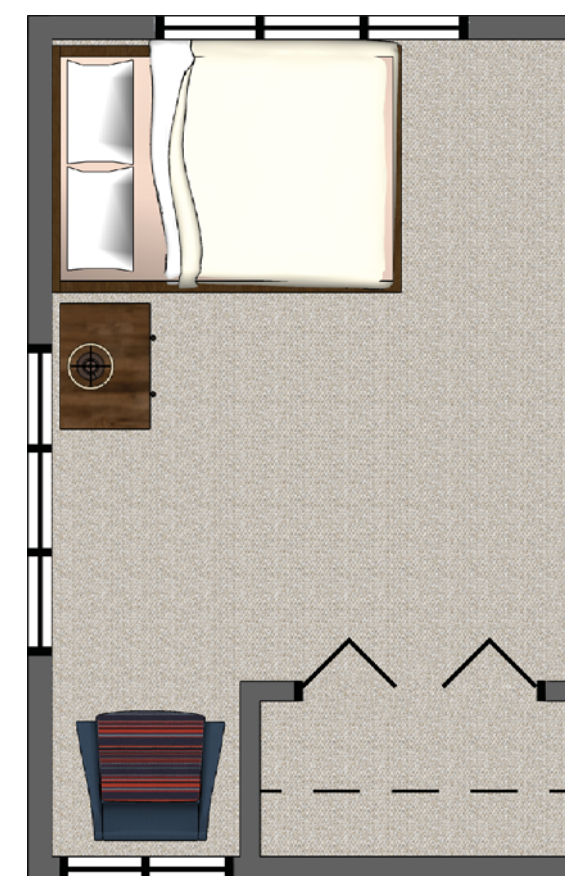
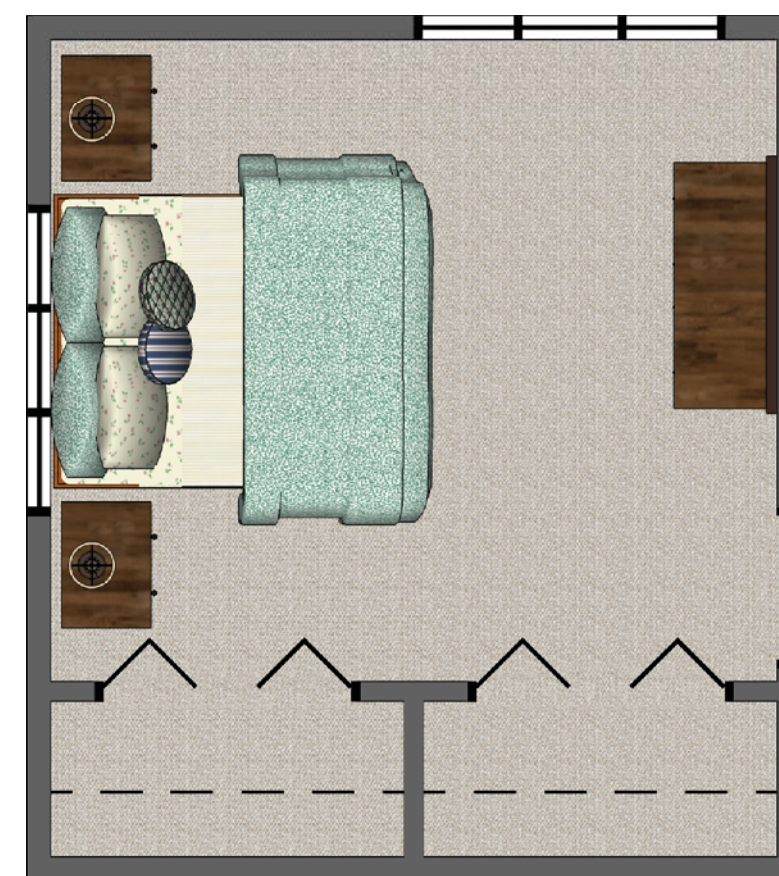
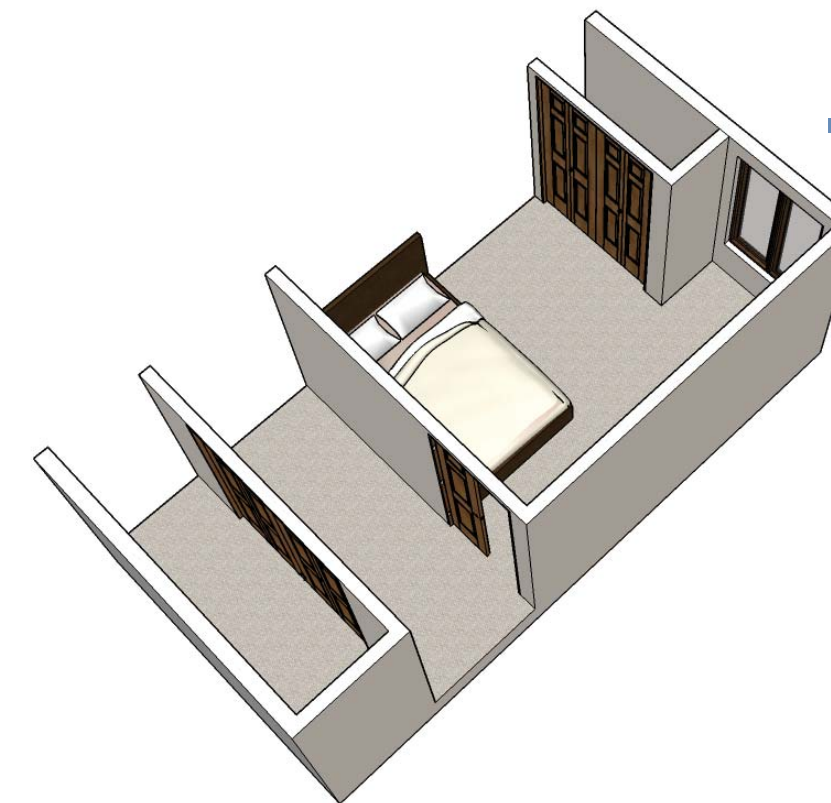
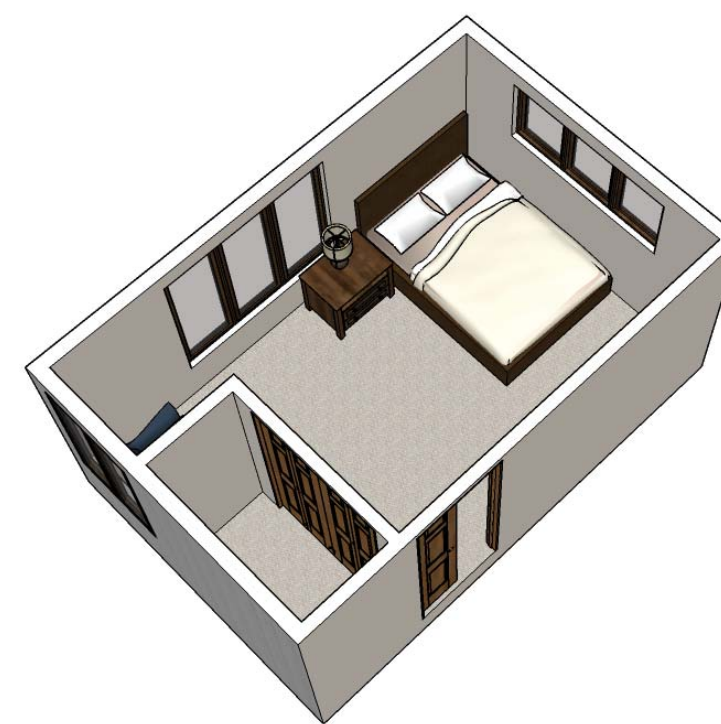
modularity



iterations



module design



1a

king or queen bed
306.50 square feet

1b

queen or full bed
247.25 square feet

1c

full or twin bed
180.50 square feet

1d

full or twin bed
214.50 square feet

universal design principles

at least 42"-48" path of travel

ample shelf space next to the bed

bed has view of the door

high windows add daylight without compromising privacy

lights are operable from bed

lamps for reading

variety of drawers, shelves, and hanging space in closet

adequate lighting in closets

full height mirror

adequate electrical outlets near bed

36" pocket doors where possible

1 ft. 5 ft. 10 ft.

1: bedroom



2a

large

204.25 square feet



2b

small

162.75 square feet

1 ft. 5 ft. 10 ft.

universal design principles

front loading washer and dryer located side by side for easier access from a seated position

laundry located in a central location

“wet room” bathroom--no enclosed shower

18” high shower seat with slightly angled vertical portion

mirror with anti-fog features

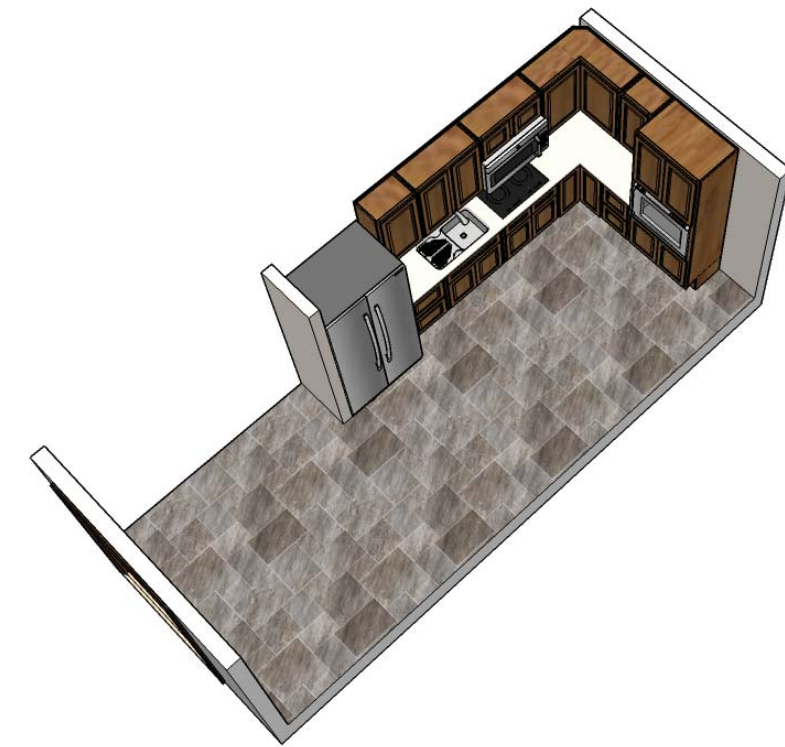
textured, non-slip flooring

adjustable, hand-held shower head

skylights add daylight without compromising privacy

36” pocket door

2: bathroom & laundry



3a

open

165.25 square feet



3b

enclosed

165.25 square feet

1 ft. 5 ft. 10 ft.

universal design principles

front controls on single row of cooktop burners

wall mounted oven with side swinging door

lever, touch, or sensor style faucet

32"-34" high countertops with rounded edges

upper cabinets 12"-15" above base cabinets

flooring continues under cabinets for future removal if needed

9" high, 6" deep baseboards on cabinets to accommodate wheelchairs

electrical outlets located on front of base cabinets for easy access

d-shaped cabinet pulls

3: kitchen & entry



4a

large

257.50 square feet

4b

small

174.75 square feet

1 ft. 5 ft. 10 ft.

universal design principles

soft furniture and cushions for acoustical dampening

dining table with trestle or pedestal base so seats of all sizes can fit on all sides

separate spaces with furniture, not walls

variety of lighting types

power operated window openings

18" -20" window sill height

4: living & dining



5a

bed, bath, laundry
306.50 square feet



5b

kitchen, living, dining, entry
257.50 square feet

1 ft. 5 ft. 10 ft.

tiny house principles

in general:

the use of large windows gives the feel of a larger space and helps to connect to nature

open floor plan to create overlapping spaces

utilize light colors to make the space feel larger

the addition of a deck adds more space without adding square footage

having a sloped roof makes the home seem more like a house than an RV trailer

using a tankless water heater saves space and energy

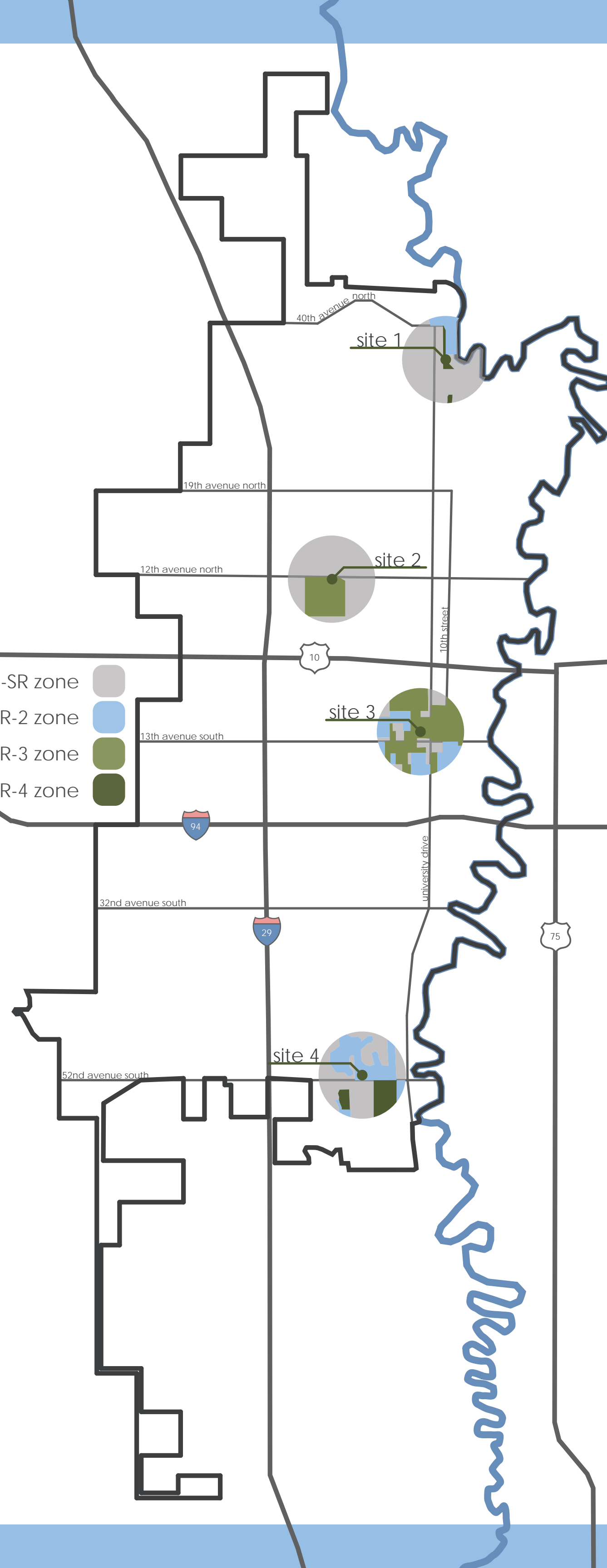
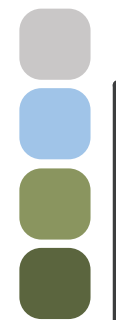
5: combination

example solutions



fargo

- non-SR zone
- SR-2 zone
- SR-3 zone
- SR-4 zone



site 1

site 2

site 3

site 4

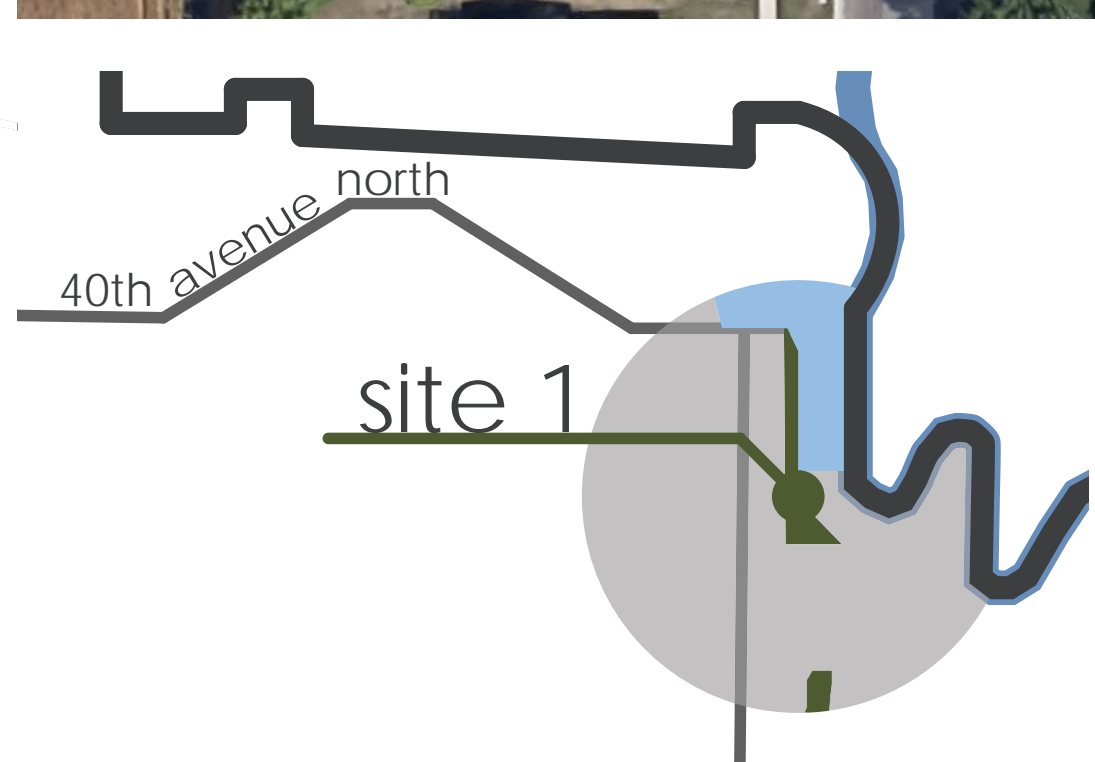
site 1: 3750 10th street north

site 2: 1138 28th street north

site 3: 1324 11th avenue south

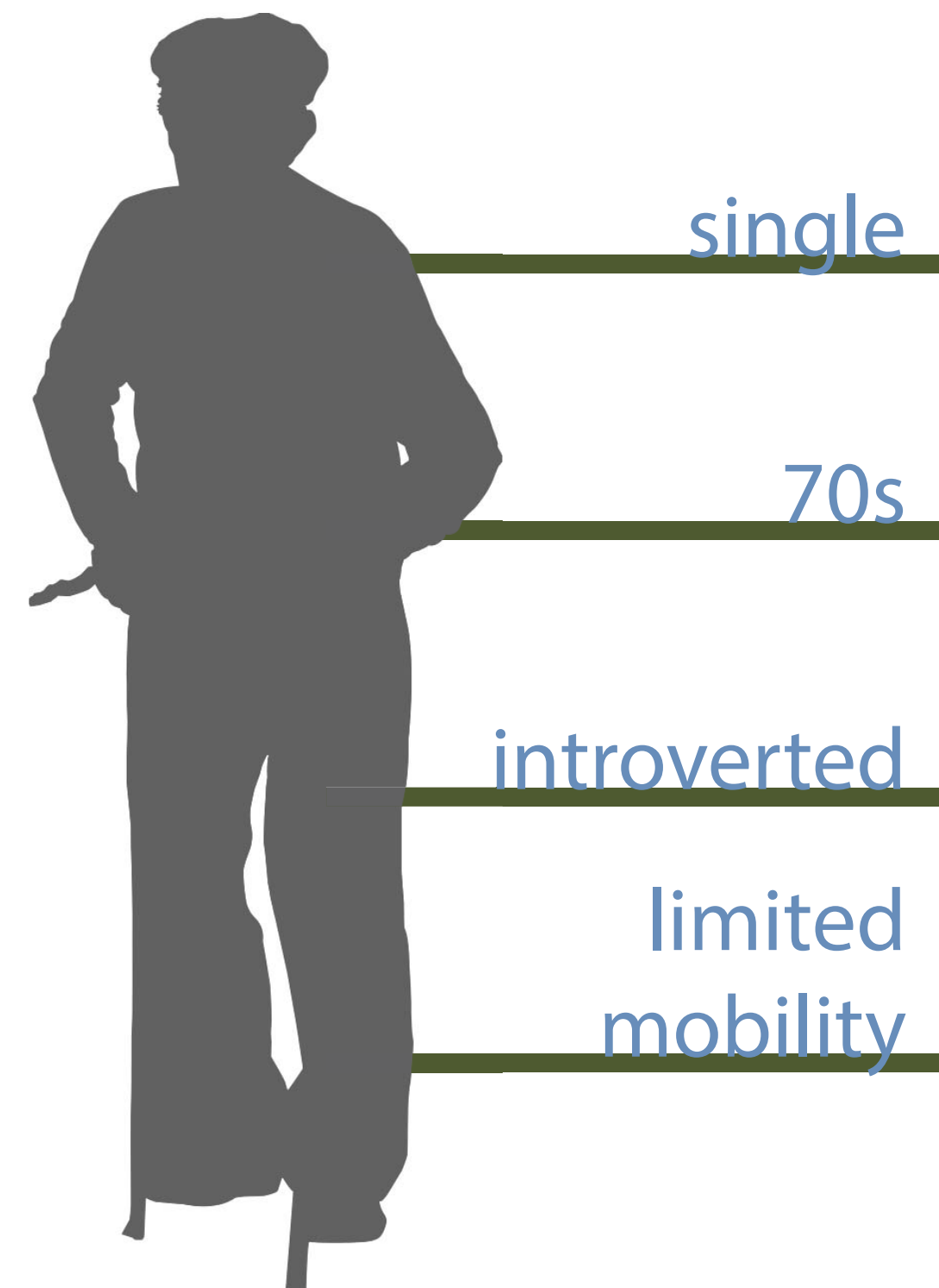
site 4: 5069 rose creek parkway

site information



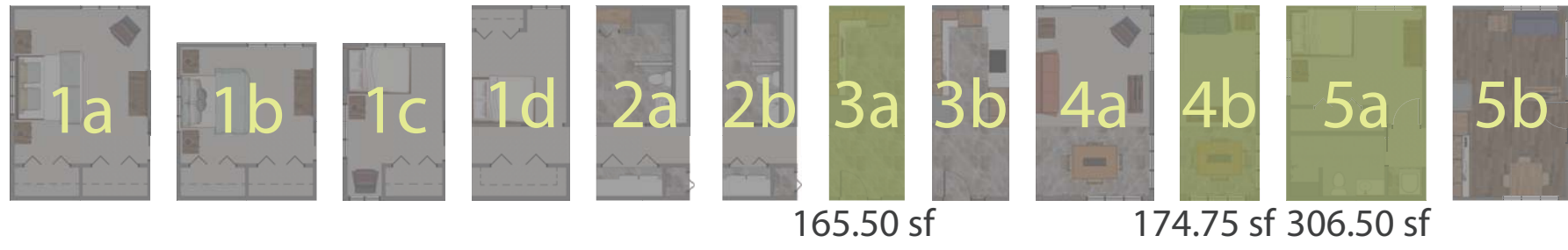
total lot: 5,890 square feet		
allowable lot coverage: 45% (2,650.5 square feet)		setback coverage: 21.7% (1,267 square feet)
existing buildings: 18.5% (1,088 square feet)	ADU allowable: 12% (706.8 sq. ft.)	other use: 33.3% (1,972.5 square feet)

site 1: 3750 10th street north

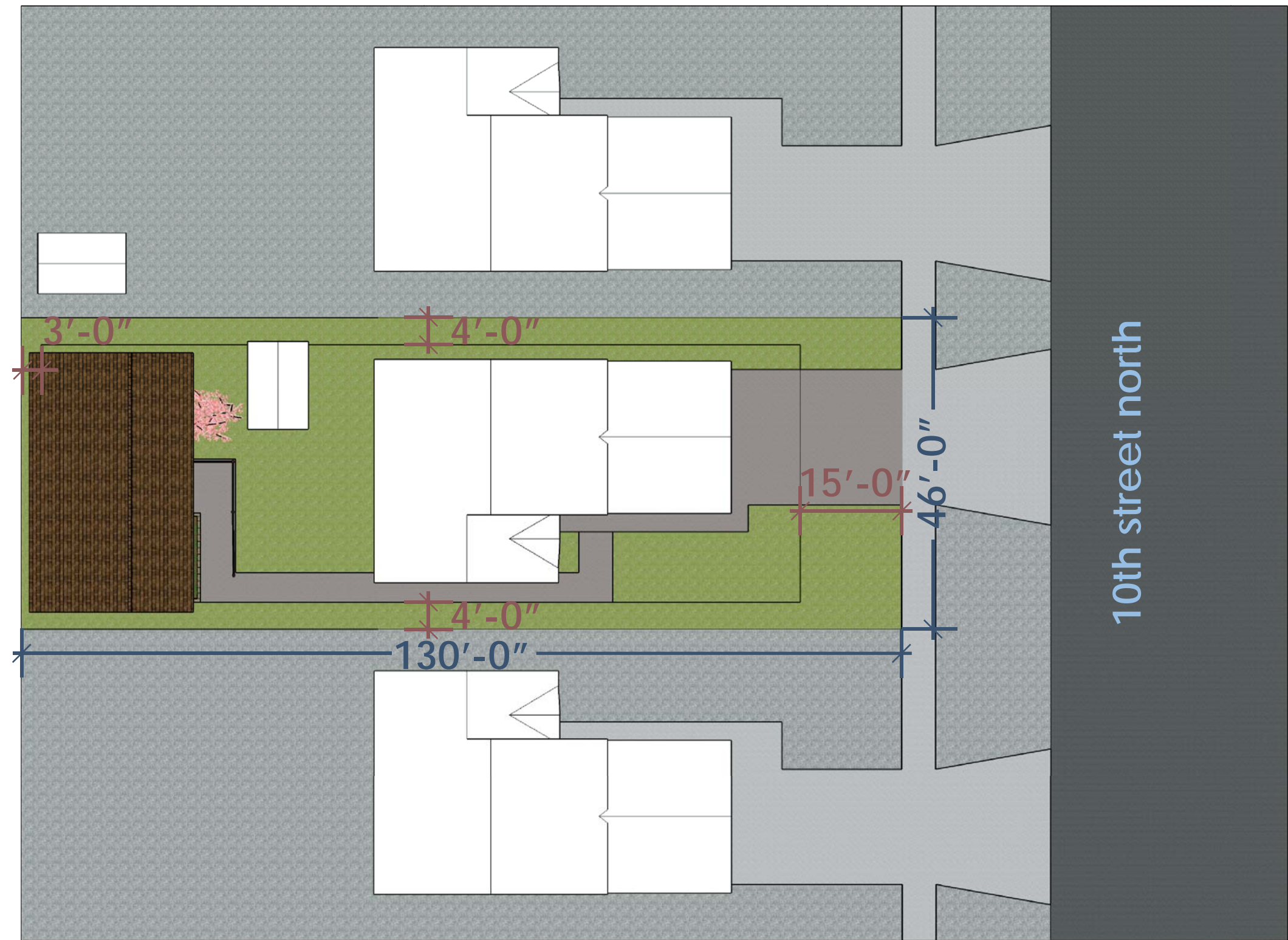


site 1: 3750 10th street north

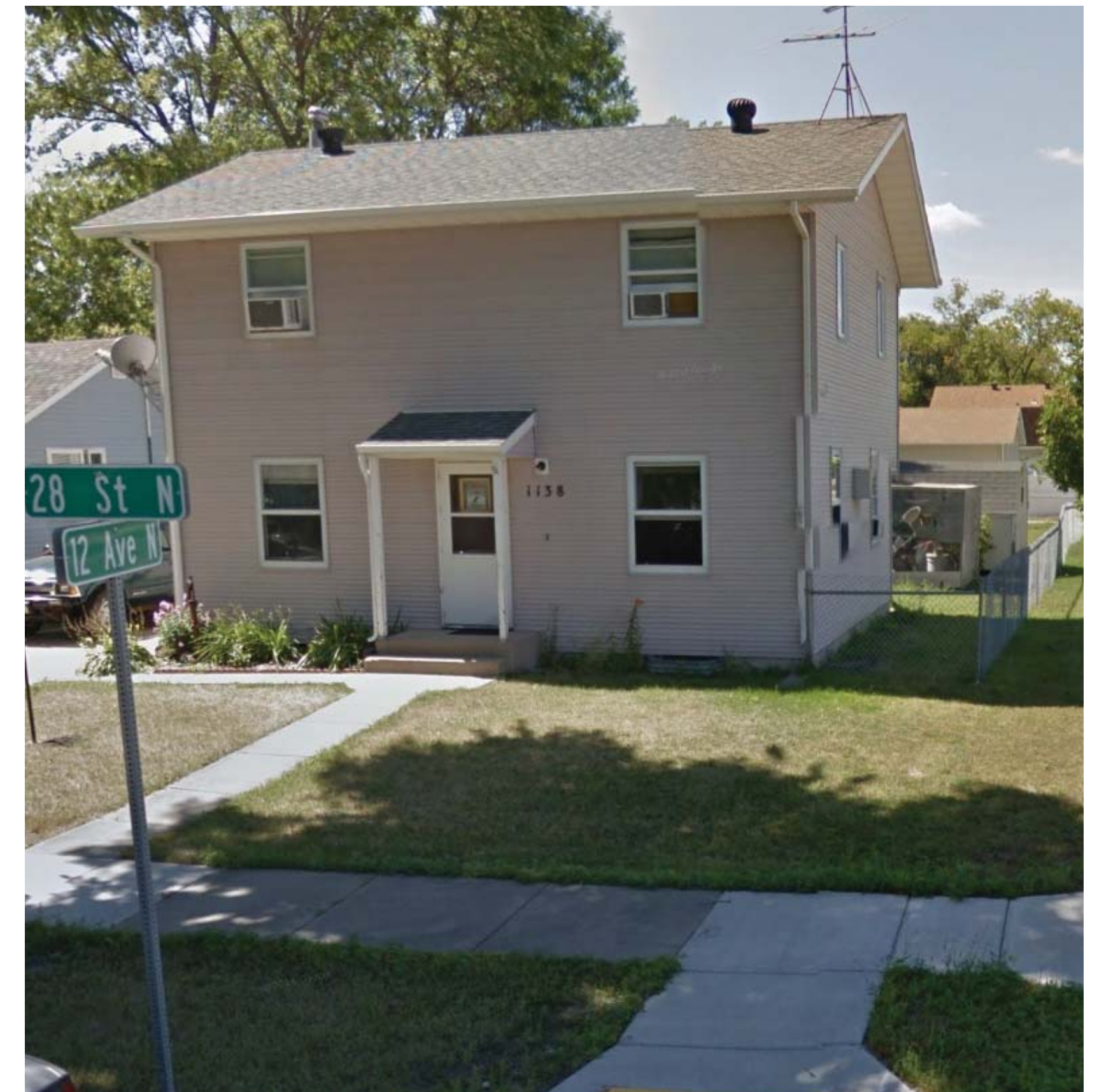
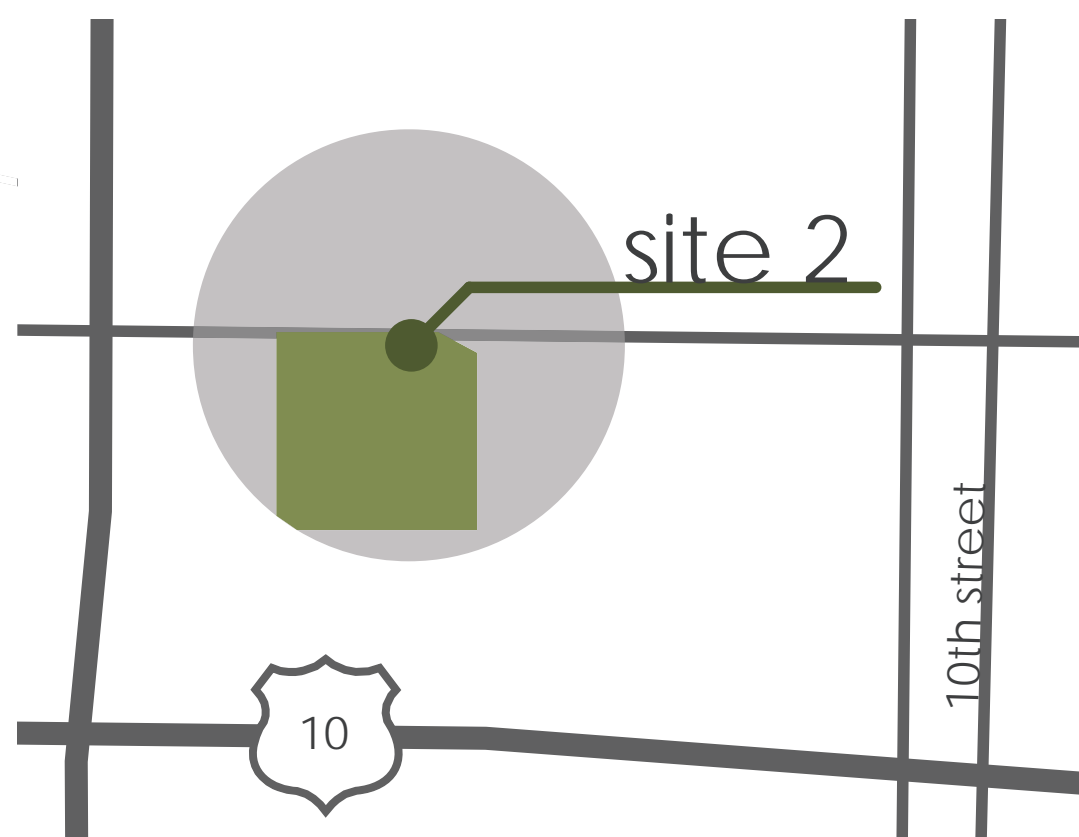
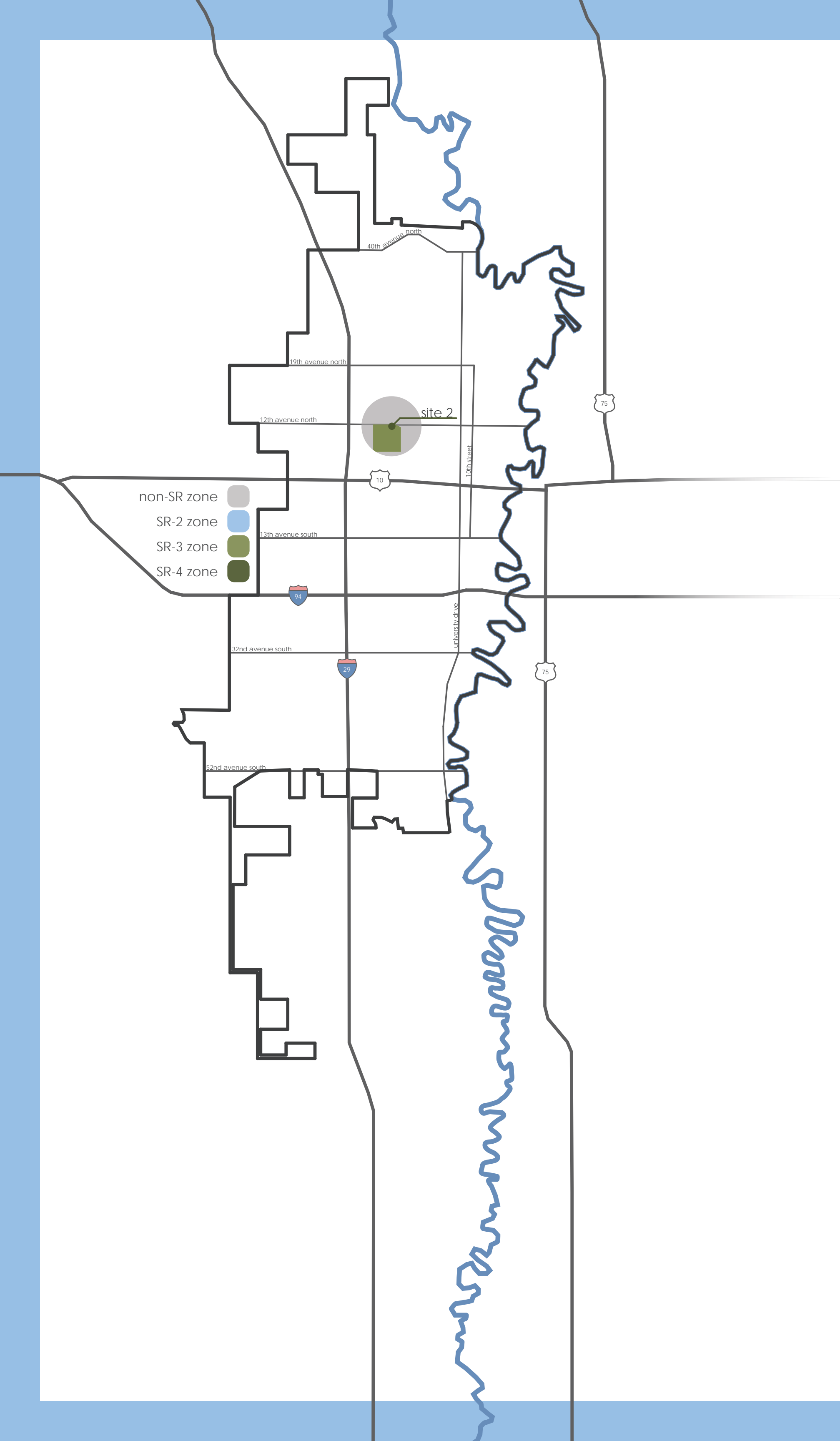
proposed solution:



= 646.75 square feet

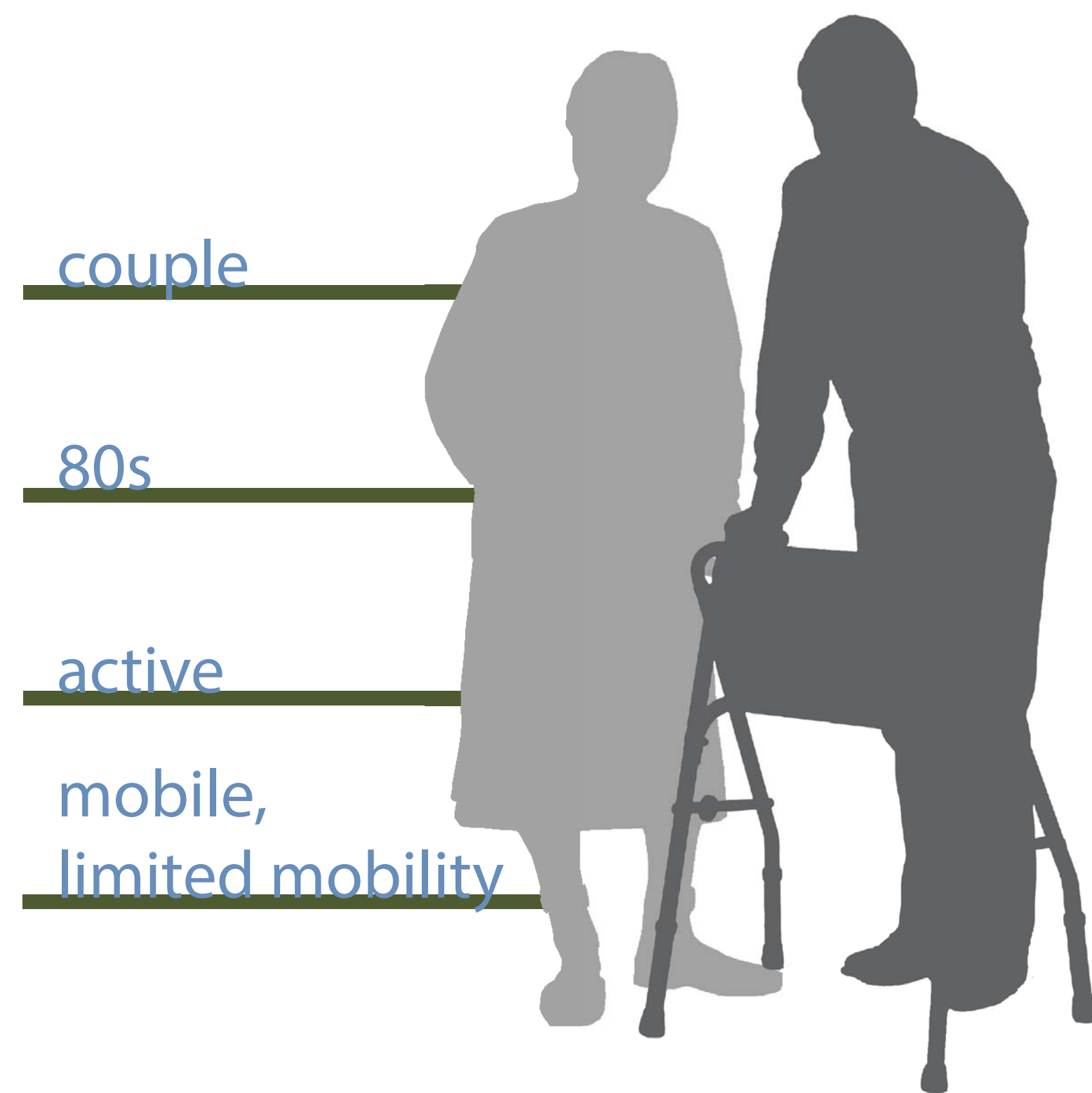


site 1: 3750 10th street north



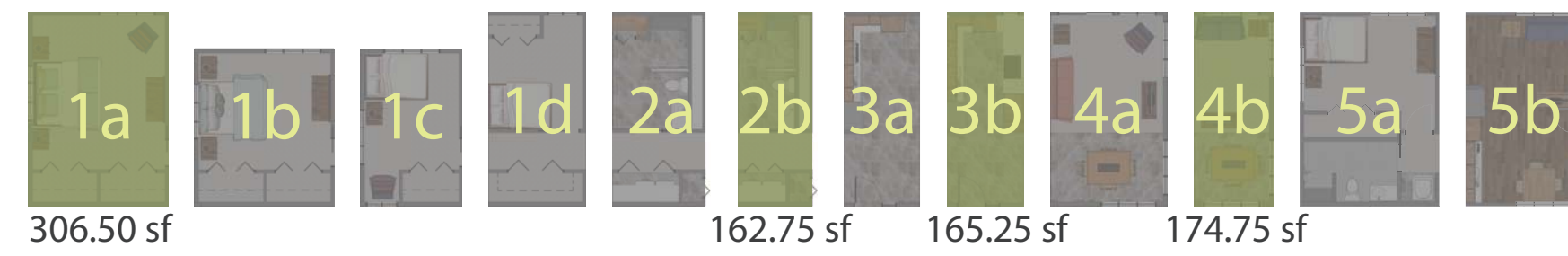
total lot: 7,000 square feet			
allowable lot coverage: 25% (1,750 square feet)		setback coverage: 54.1% (3,790 square feet)	other use: 20.9% (1,460 square feet)
existing buildings: 11% (1,239 sq. ft.)	ADU allowable: 12% (840 sq. ft.)		

site 2: 1138 28th street north

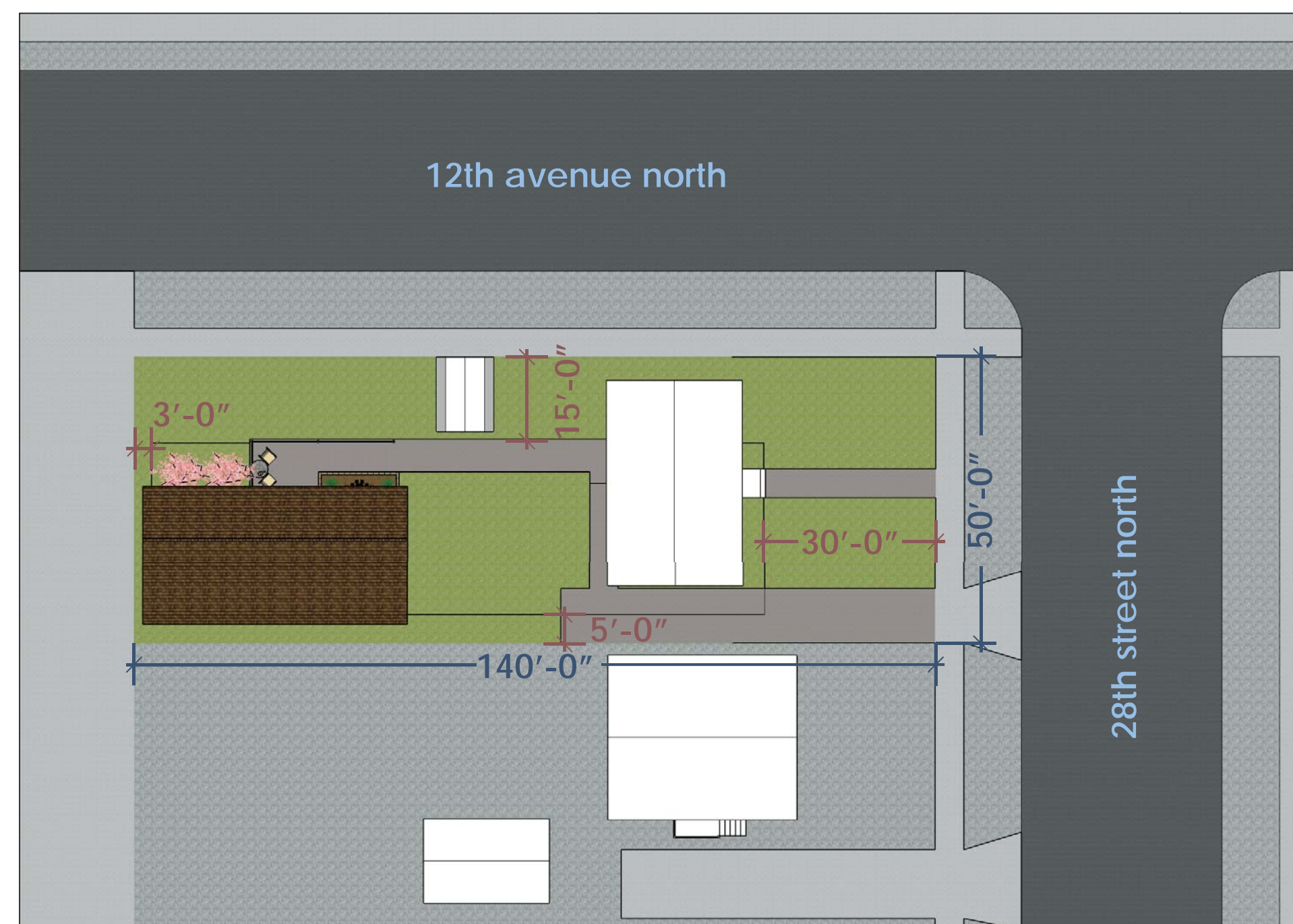


site 2: 1138 28th street north

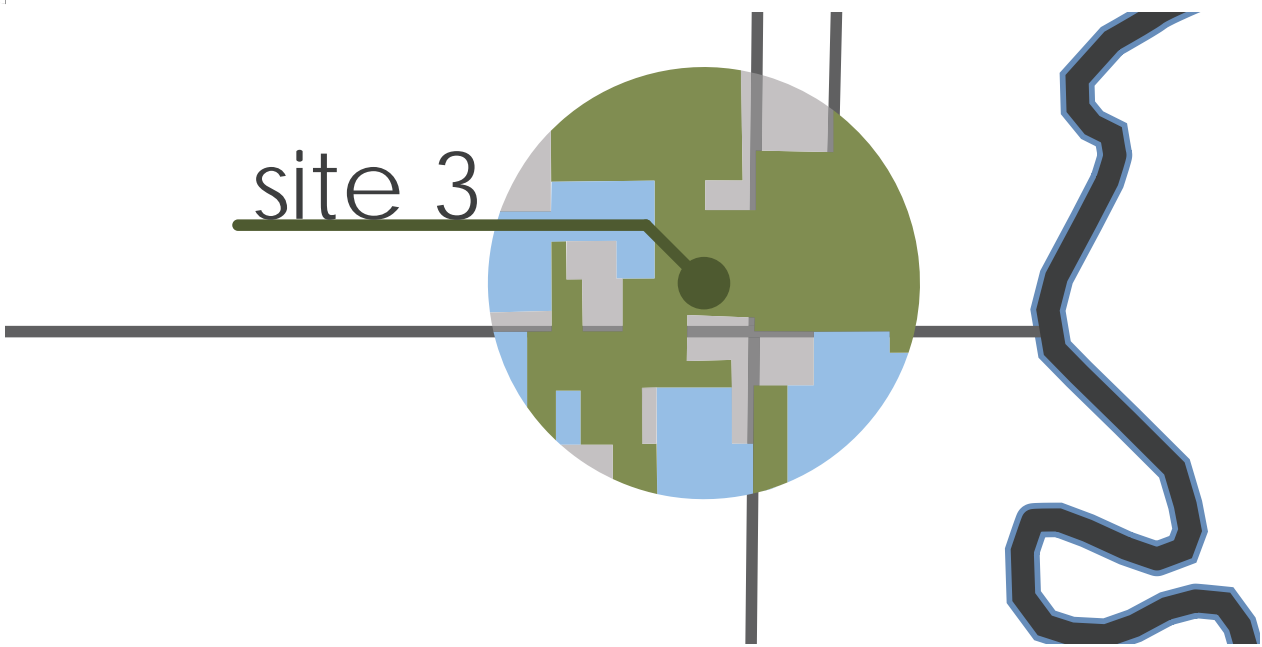
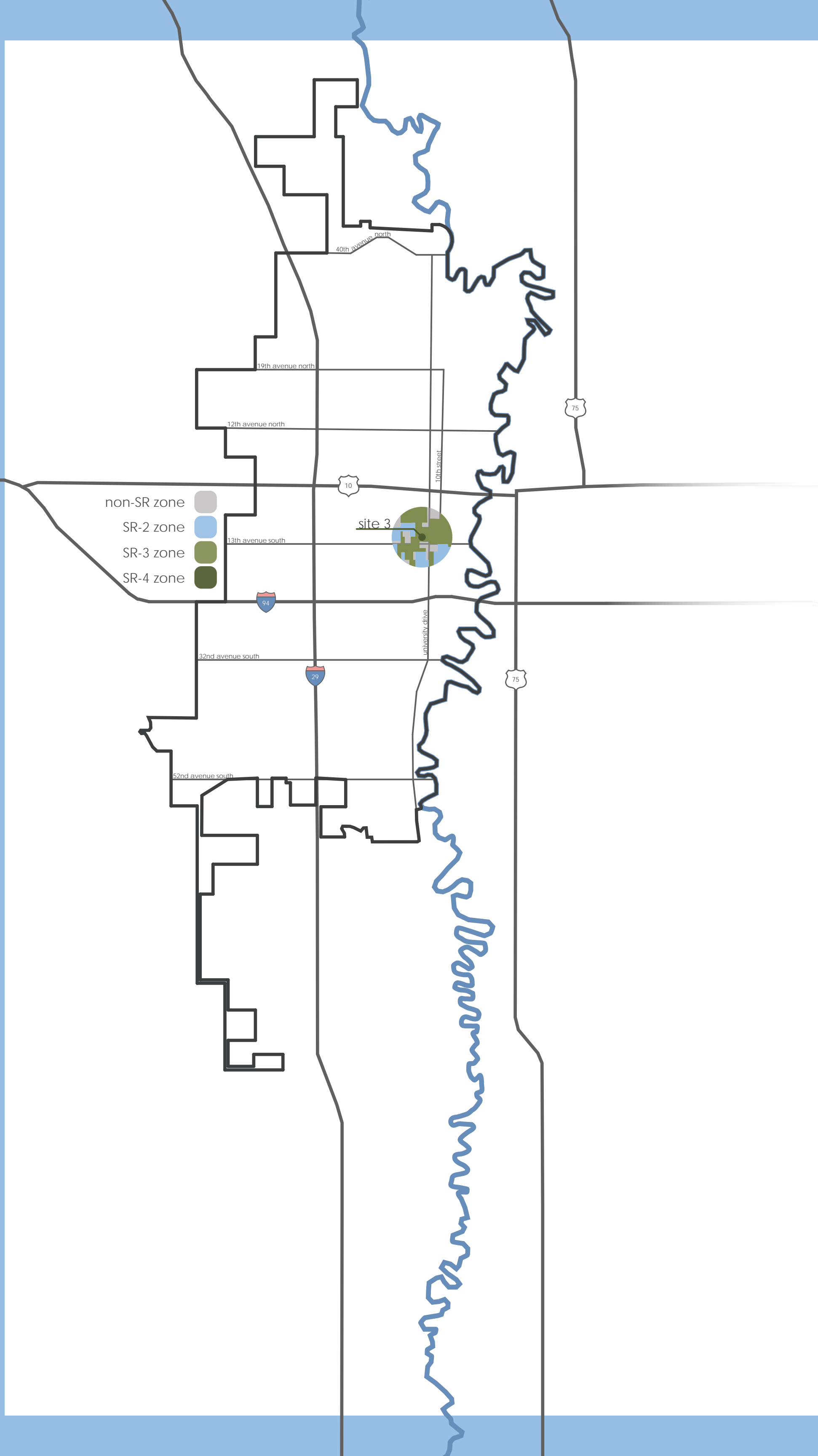
proposed solution:



= 809.25 square feet

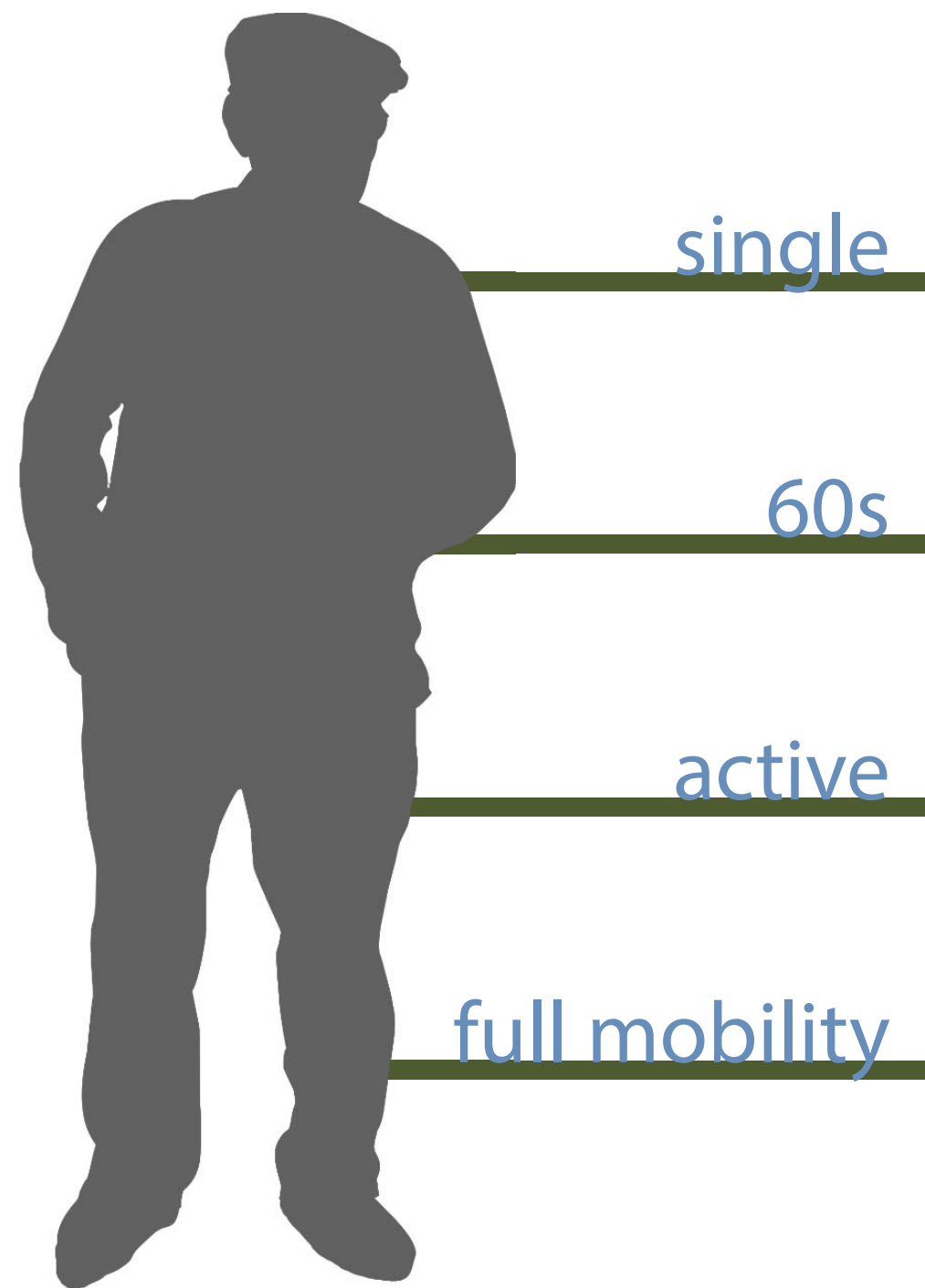


site 2: 1138 28th street north



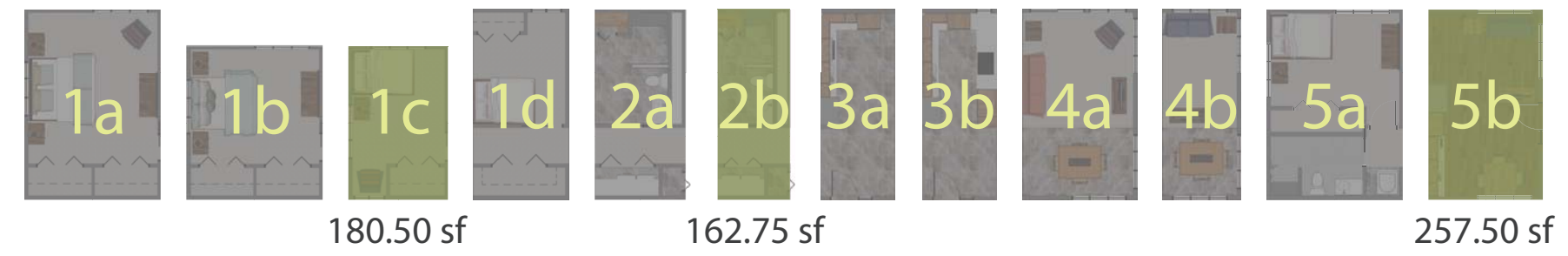
total lot: 6,692 square feet			
allowable lot coverage: 35% (2,342.2 square feet)		setback coverage: 33% (2,222.6 square feet)	
existing buildings: 18.5% (1,239 square feet)	ADU allowable: 12% (803 sq. ft.)	other use: 32% (2,127.2 square feet)	

site 3: 1324 11th avenue south

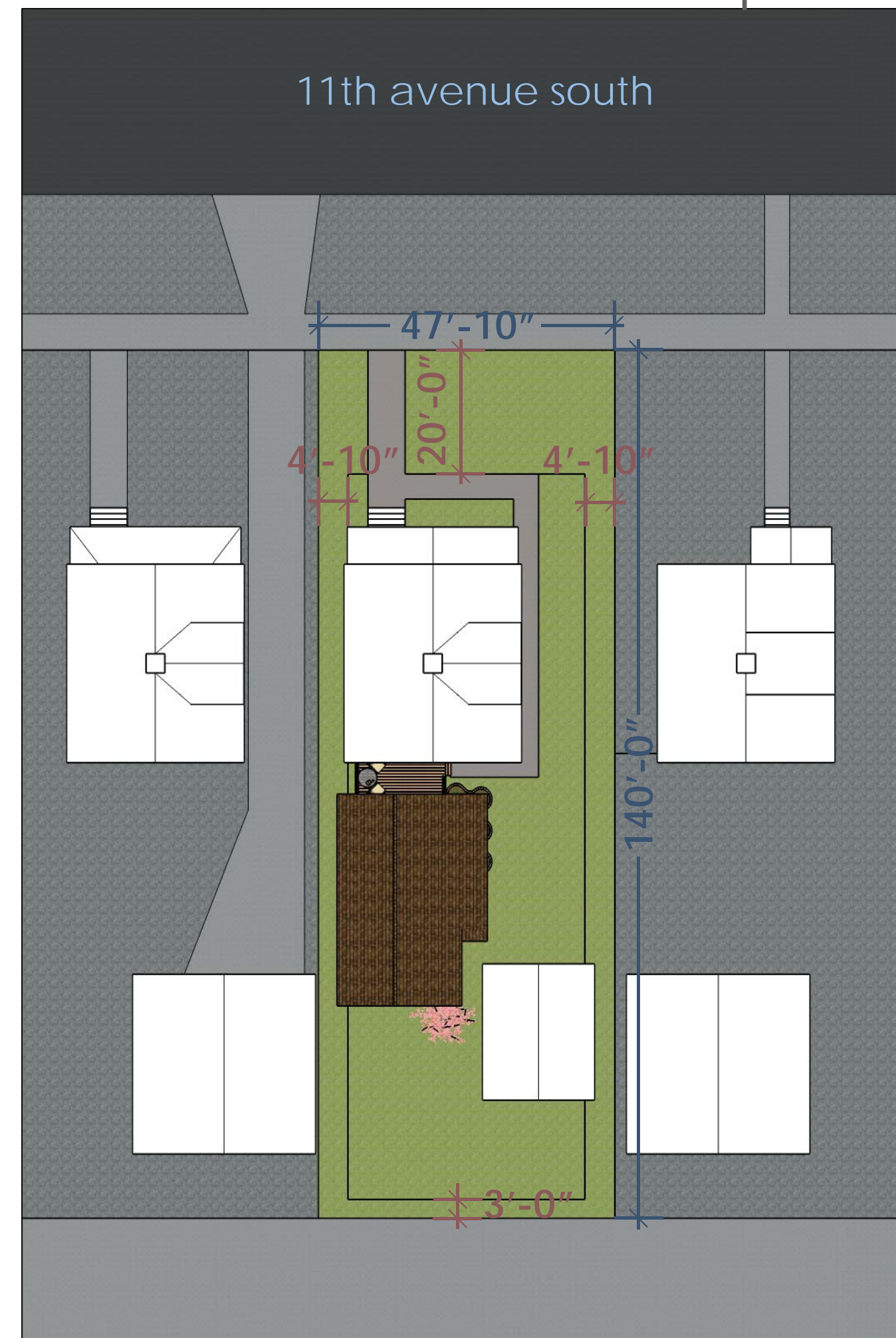


site 3: 1324 11th avenue south

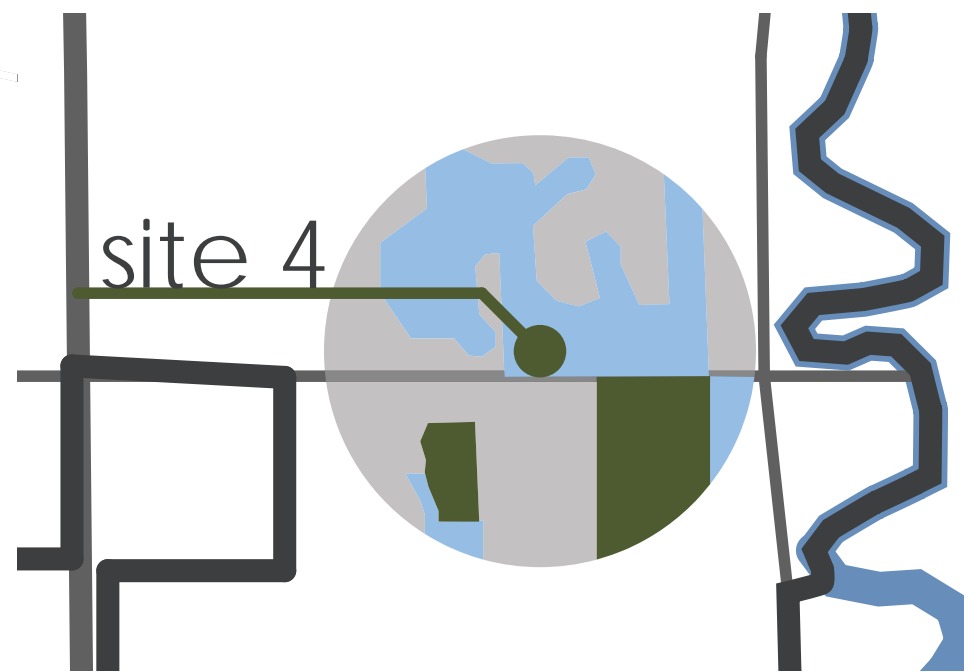
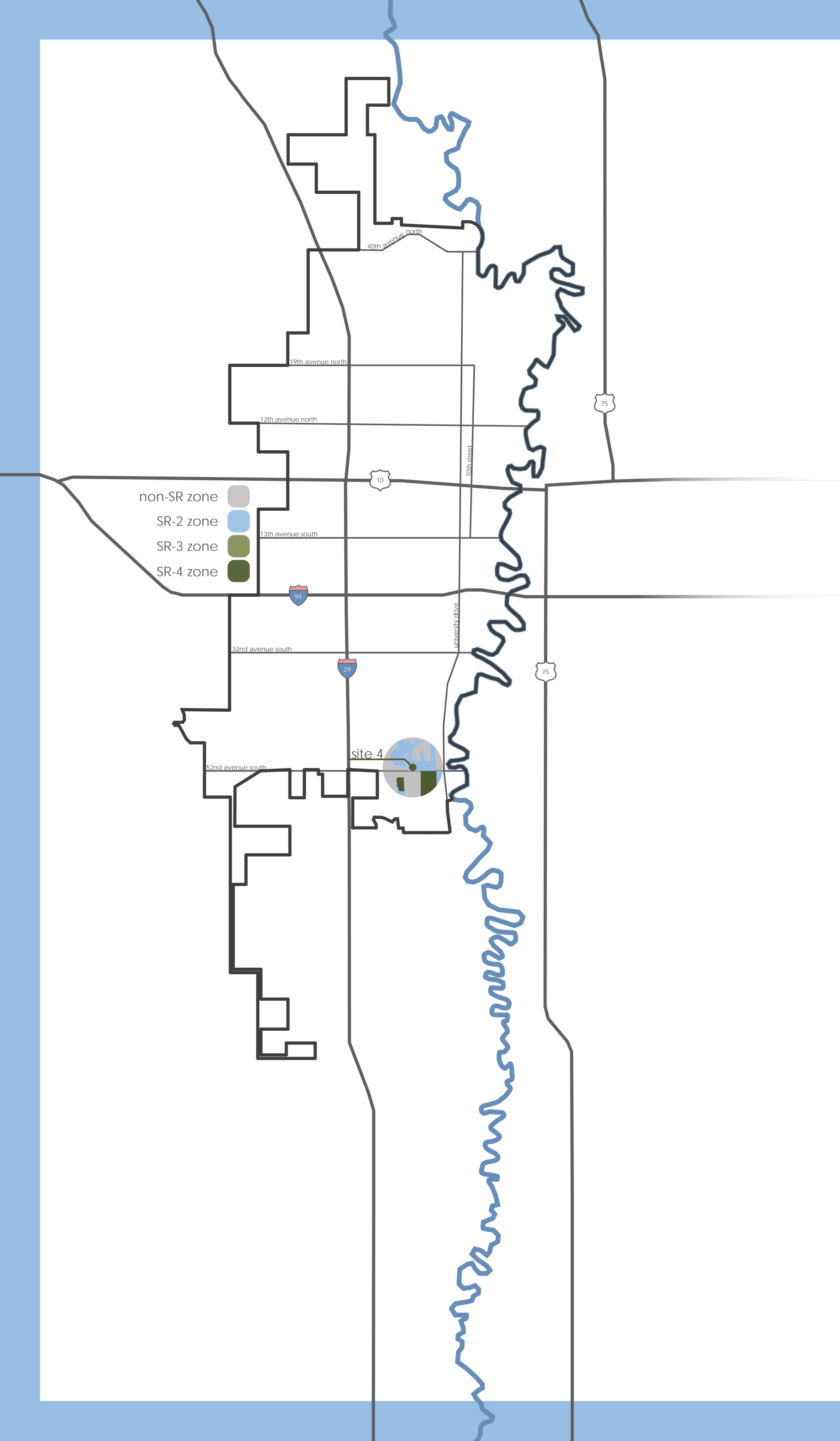
proposed solution:



= 600.75 square feet

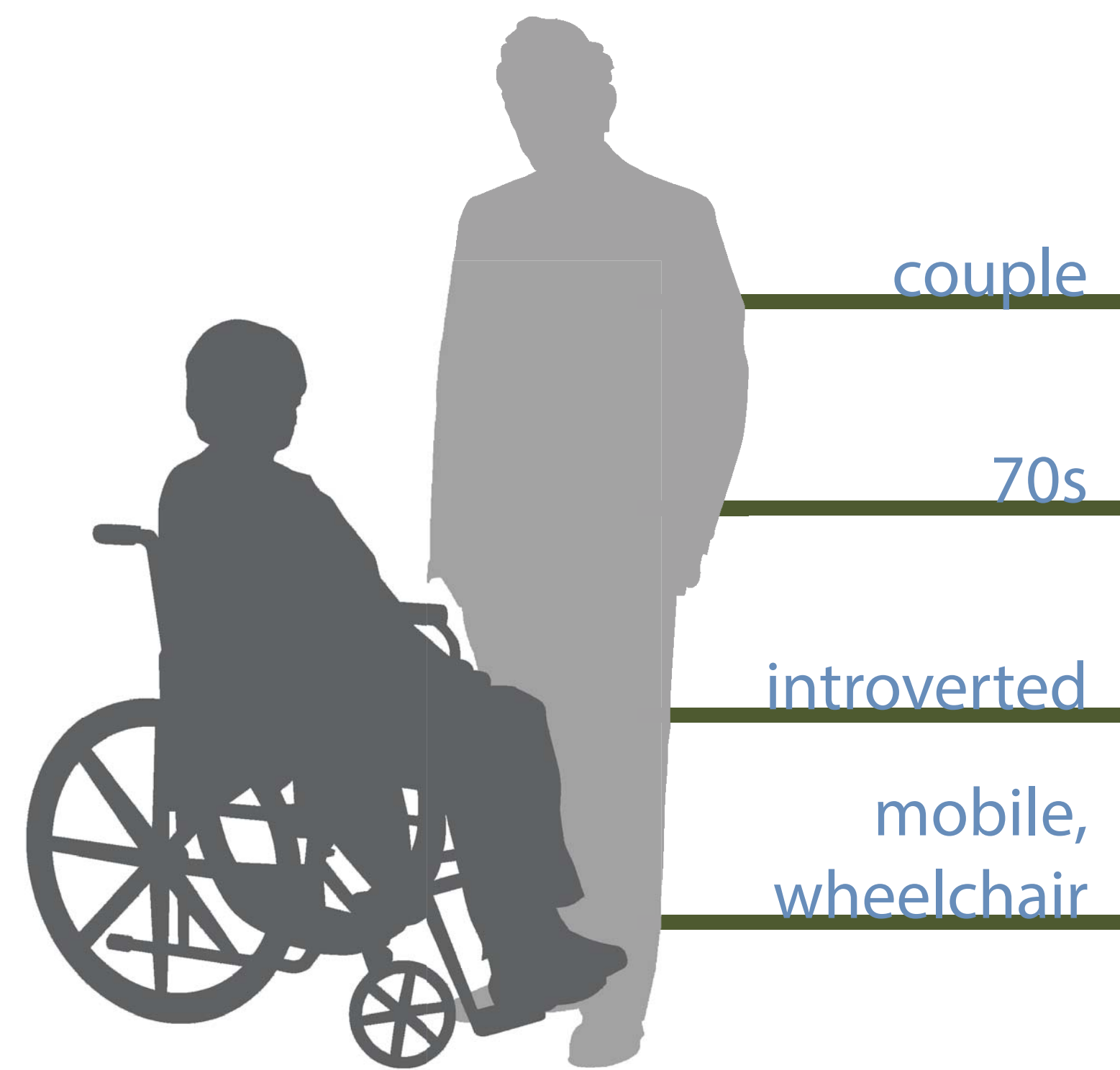


site 3: 1324 11th avenue south



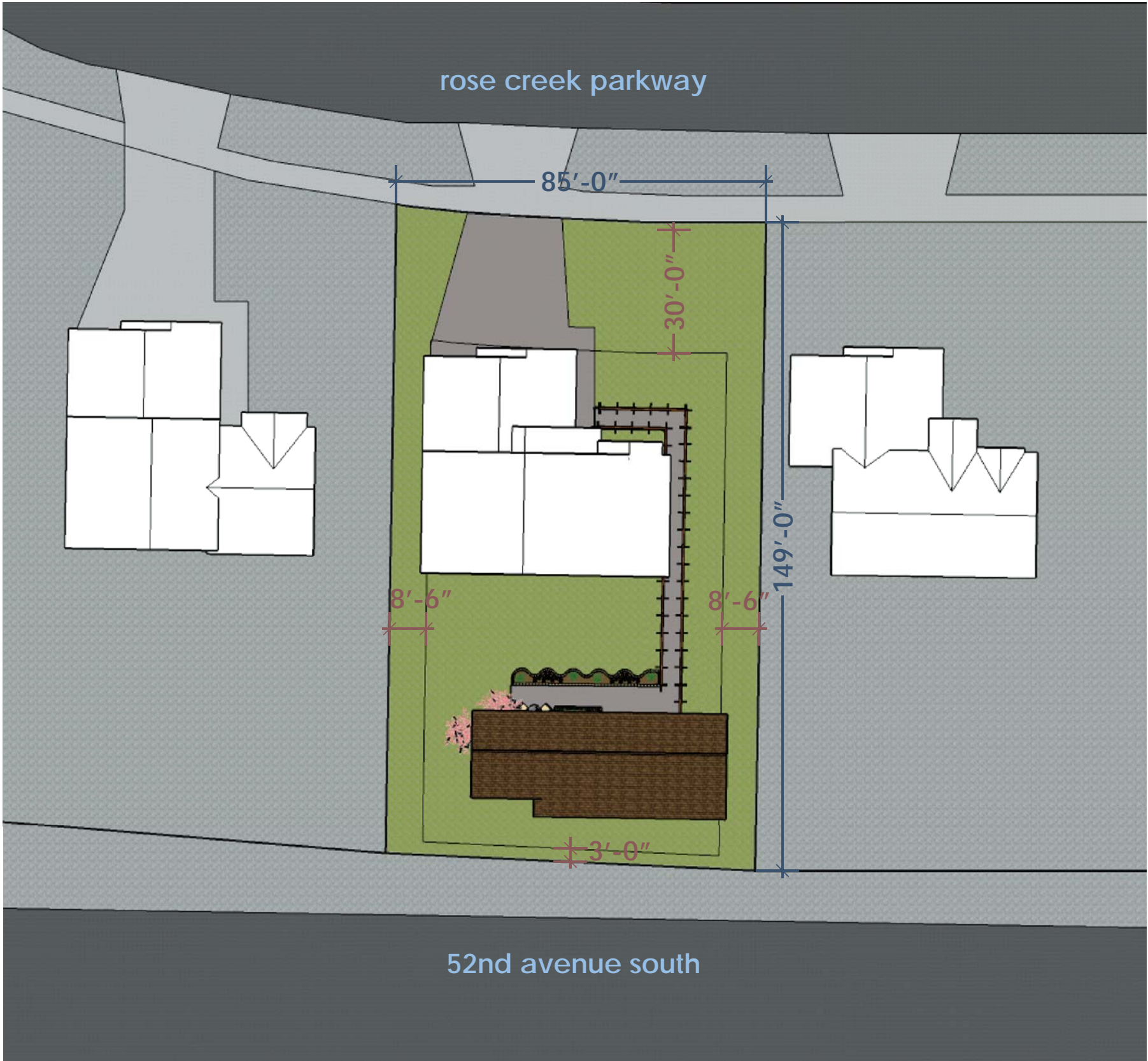
total lot: 12,667 square feet				
allowable lot coverage: 25% (3,166.8 square feet)		setback coverage: 37.5% (4,747 square feet)		other use: 37.5% (4,753.2 square feet)
existing buildings: 16.2% (2,064 square feet)	ADU max.: 8.8% (1,103 sf)			

site 4: 5069 rose creek parkway



site 4: 5069 rose creek parkway

proposed solution:



1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b
247.25 sf	214.50 sf	204.25 sf	165.25 sf	257.50 sf							

= 1,088.75 square feet

site 4: 5069 rose creek parkway



How can modular accessory dwelling units facilitate aging in place in Fargo, North Dakota?

↳ needs
based

↳ smaller, intimate, more
personalized living
space

↳ people prefer
to age in their
own homes for
as long as they
possibly can

↳ Fargo currently
does not mention
ADUs in the land
development code

thank you